

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
11 January 2001 (11.01.2001)

PCT

(10) International Publication Number  
**WO 01/03078 A1**

(51) International Patent Classification<sup>7</sup>: G07F 7/08, 7/10  
// H04M 15/00, H04Q 7/38

(21) International Application Number: PCT/NO00/00230

(22) International Filing Date: 4 July 2000 (04.07.2000)

(25) Filing Language: Norwegian

(26) Publication Language: English

(30) Priority Data:  
19993332 5 July 1999 (05.07.1999) NO

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

— Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

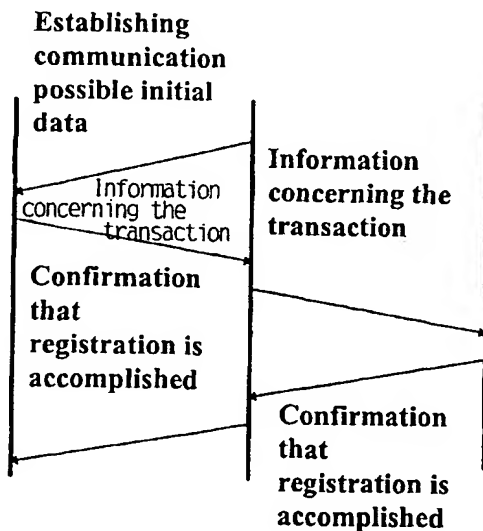
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(54) Title: METHOD AND SYSTEM FOR PAYMENT TRANSACTION

PAYMENT  
TERMINAL

MOBILE  
TELEPHONE

OPERATOR  
SYSTEM



(Communication  
connection)

(Network)

(57) Abstract: The invention relates to a method and a system for performing a payment transaction between a customer's mobile telephone, a sales location's payment terminal and a payment operator's operator system. The transaction is initiated by the mobile telephone. Data concerning the transaction are then transferred from the payment terminal via an electrical or optical communication port to the mobile telephone and from the mobile telephone via a network to the operator system. The operator system registers data concerning the transaction for subsequent charging, invoicing or other settlement. Furthermore, a confirmation of this registration is transmitted back to the mobile telephone and on through the electrical or optical communication port to the payment terminal. The transaction is concluded by an indication being provided that it has been executed and registered.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

### Method and system for payment transaction

The present invention relates to a method and a system for performing a payment transaction between a customer, a sales location and a payment operator.

5 In business or sales locations, both public and private, including shops, restaurants, hotels and other service industries, etc., payment transactions are normally based on either traditional cash payment, or on the use of payment machines for payment cards. These well-established methods of performing payment transactions require the customer either to be in possession of cash  
10 in the form of notes or coins, or he/she must have a payment card in the form of a magnetic or smart card.

It looks as if cash is a means of payment which will be less widely used in the future on account of the substantial costs involved. These costs are due amongst other things to the extensive mechanical routines involved in issuing  
15 new coins and notes, as well as resource-demanding and sometimes risky routines for handling, collecting, transporting and storing money in the form of cash.

To-day the use of payment terminals or machines with magnetic cards/smart cards is very widespread and also considered to be a rational payment  
20 routine. However, it is encumbered with disadvantages such as cost-demanding production and distribution of cards. A card is usually renewed after two years due to wear. The way in which the payment terminals work is conducive to wear. It is the "read head" for reading the magnetic card which is the weak point here.

25 It is relatively expensive for a business place to use payment terminals. In the first place, the payment terminals have a relatively expensive production cost. Then such terminals are connected to a telecommunication or data network for transfer of data, thereby adding to the costs. Banks and card companies, moreover, charge a high price for their services, which in itself  
30 makes the price higher for a consumer. To-day the banks have complete freedom to decide both the price of what a business place must pay in order to possess a payment terminal, and the consumer's fees for the use of the payment card in the machine.

Attempts have also been made earlier to provide new ways of effecting payment transactions, whose object is, amongst other things, to redress the aforementioned problems.

5 A previous known solution whose aim is to offer a customer the possibility of carrying out goods or service purchases by means of a mobile telephone, is disclosed in US patent 5.608.778. This publication describes a system where by means of the mobile telephone the customer can obtain credit when making a purchase at a sales location. The customer's mobile telephone is wirelessly connected to a base station. The base station can also  
10 communicate with a credit centre, and the credit centre can further communicate with terminal equipment at the sales location. The publication also describes various communication protocols for performing a transaction where the customer obtains credit from the credit centre when purchasing goods or services at the sales location. Fig. 4 of the publication illustrates  
15 such a protocol, where a part of the method for the transaction consists in the following steps:

- the mobile phone transfers data to the terminal equipment at the sales location, which data comprises identification for the mobile telephone, a transaction password and an authorisation, whereupon  
20 - the terminal equipment transfers data to the credit centre, whereupon
- the credit centre transfers a confirmation to the terminal equipment, and finally
- the terminal equipment transfers the confirmation to the mobile telephone.

25 The transfer of data from the mobile telephone to the terminal equipment is stated to take place by means of the mobile telephone's radio transfer, the terminal equipment being linked to a receiver with low sensitivity, which can receive radio signals from the mobile telephone.

30 This known protocol permits goods and services to be purchased at the sales location, where a settlement is subsequently effected between the customer and the credit centre. The credit centre may, for example, be a company associated with the mobile telephone company, thus enabling the settlement for the goods or services to be effected by means of the same account as the account for other use of the mobile telephone.

The method and the system disclosed in the publication, however, have some weaknesses, which it is the object of the present invention to redress.

5 A first weakness is that the terminal equipment at the sales location must be in communicative connection with the credit centre, for example by being connected to a telephone or mobile telephone network.

10 A second weakness of the known system is that the local, low-sensitivity radio receiver may tend to be subject to interference from other mobile telephones or other communication devices, and therefore there is a need to provide a more secure and reliable form of communication between the mobile telephone and the terminal equipment.

15 A first object of the present invention is to provide a method for performing a payment transaction as mentioned at the beginning, and which is not encumbered by the above drawbacks. This object is achieved by means of a method as stated in the introductory part of the following claim 1, characterized by the features which are indicated in the characterizing part of the claim.

20 A second object of the present invention is to provide a system for performing a payment transaction as mentioned at the beginning, and which is not encumbered by the above drawbacks. This object is achieved by means of a system as stated in the introductory part of the following claim 9, characterized by the features which are indicated in the characterizing part of the claim.

Further advantages are obtained by means of the features in the dependent claims.

25 The invention will now be described in more detail with reference to the drawings, in which

fig. 1 illustrates a method according to the invention, and

figs. 2a and 2b illustrate a system according to the invention.

30 Figure 1 illustrates which steps are included in an embodiment of a method according to the invention.

A mobile communication unit, which preferably is the customer's mobile telephone, first establishes a communication with a special payment terminal at the sales location. Unlike traditional payment terminals, this payment terminal is not necessarily equipped with means for communication via the telecommunication network, but instead is arranged for local communication with the mobile telephone, which then performs the further communication with the surrounding world.

The communication between the mobile telephone and the payment terminal takes place preferably by placing the mobile telephone in physical, electrical connection with the payment terminal. For this purpose the mobile telephone's built-in communication port is preferably employed. An alternative solution is to employ wireless, but not radio-based transfer, such as, for example, optical transfer, particularly infrared transfer (IrDa). A number of mobile telephones to-day are equipped with means for such infrared communication. A further alternative which still lies within the scope of the invention, but which, if used, redresses the second of the disadvantages of the prior art as mentioned above, is to employ radio-based communication in the same way as in the above-mentioned publication, with a radio receiver provided in the payment terminal. Such radio-based communication between the mobile telephone and the payment terminal may employ different frequencies from the ordinary communication frequency for the mobile telephone, and may, for example, be based on technology according to the Bluetooth specification.

In connection with the establishment of communication connection between the mobile telephone and the payment terminal, initial data may be transferred from the mobile telephone, which, for example, may comprise information which is typed in on the mobile telephone's keyboard. This may comprise an identification or authentication of the customer and/or the sales location.

After establishing the communication connection, if it is equipped with display means, the payment terminal can display the data or parts of the data which are transferred from the mobile telephone, possibly together with information which is contained in the payment terminal concerning the transaction, for example the amount which has to be paid.

When the communication connection between the mobile telephone and the payment terminal has been established, the payment terminal transfers information concerning the transaction via the established communication connection to the mobile telephone. This information will preferably at least  
5 comprise the amount covered by the transaction, any other information on what is involved in the transaction, such as number and types of goods and services, and in addition an identification of the sales location. The information may further comprise an identification of the mobile telephone, information concerning its subscription, an associated telephone number or  
10 the mobile telephone's owner. The transferred identification of the sales location can be found stored in storage means in the payment terminal, but it can alternatively be read into a keyboard or other input unit on the mobile telephone or on the payment terminal. A further alternative is to have the identification of the sales location broadcast, for example by a radio  
15 transmitter provided locally at or near the sales location, so that it can be received by receiver equipment in the payment terminal and subsequently transferred to the mobile telephone. The latter alternative is particularly appropriate if the payment terminal is of a mobile type, which thereby can be moved from one sales location to another, where it is used without any  
20 reprogramming or similar modification.

This information is then further transferred to an operator system. This communication takes place through a network comprising the ordinary mobile telephone network used by the mobile telephone (for example the GSM system), and which moreover may comprise other networks to which  
25 the mobile telephone network is connected, for example the ordinary fixed telecommunication network.

Alternatively, some parts of the above-mentioned information can be excluded when transferring from the mobile telephone to the operator system, and/or additional information can be added by means of this transfer. In each  
30 case, however, at least information concerning the transaction is transferred.

According to the invention, therefore, information concerning the transaction is transferred from the payment terminal to the mobile telephone, and subsequently from the mobile telephone to the operator system. At this point the invention differs significantly from the previously mentioned system  
35 from US-5.608.778, and in itself also from the known, traditional payment

terminals, where information concerning the transaction is transferred from a payment terminal to an operator system, a credit centre, a bank or the like. Since the mobile telephone replaces the payment terminal's communication means with the telecommunication network, the payment terminal which is  
5 used in the method and the system according to the invention can be provided as an independent unit, which only needs to be able to communicate with an internal system at the sales location, and locally with the mobile telephone via the previously mentioned electrical or optical communication connection.

According to the method illustrated in figure 1, the operator system further  
10 registers the received information concerning the transaction. The operator system can thereby perform subsequent charging, invoicing or other settlement, with the object of achieving agreement in the final settlement with the customer and with the sales location. This settlement may, for example, be effected by monthly, collective statements of account. If the  
15 operator system has a connection or a collaboration with the mobile telephone company, the statements of account may be combined with the ordinary accounts for the use of the mobile telephone.

In the preferred embodiment of the method illustrated in fig. 1, after this registration the operator system will transmit back to the mobile telephone a  
20 confirmation that the registration has been accomplished. This confirmation will preferably be further transmitted by the mobile telephone through the electrical, optical/infrared or similar communication connection to the payment terminal.

In one embodiment, moreover, either the payment terminal or the mobile  
25 telephone will provide an indication to the customer that the confirmation has been received. This indication may be provided by means of any kind of indicator, for example of a visual or audible type, provided in the payment terminal or on the mobile telephone. For example the indication may be provided via the mobile telephone's ordinary display unit.

Figure 2a illustrates an embodiment of a system according to the invention.  
30 The system comprises a mobile telephone, a payment terminal and an operator system which are connected to a network which can communicate with the mobile telephone. Between the payment terminal and the mobile telephone there is a communication connection. In the embodiment in fig. 2a



this consists of an electrical, preferably a multicore connection which is composed of a communication port with which the mobile telephone is equipped, and a corresponding communication port in the payment terminal.

5 Figure 2b illustrates an alternative embodiment, which is identical to the embodiment in figure 2a except for the communication connection between the mobile telephone and the payment terminal. In this case it is not designed as an electrical, direct connection, but comprises optical transmitters and receivers, preferably based on infrared light, mounted on both sides of the communication connection.

10 Electrical and infrared communication connection between a mobile telephone and an external unit is well-known per se. Many mobile telephones to-day are equipped with such communication ports as standard equipment, but this is for entirely different purposes than in the present case, viz. to provide a system for performing payment transactions.

15 The invention is described in the above by means of embodiments and for a person skilled in the art it will be clear that equivalents or obvious technical alternatives exist to the embodiments which fall within the scope of the invention, as set forth in the following set of claims.

20 While reference is made to mobile telephones in the description of the embodiments, it should be particularly emphasized that the invention will also work equally well with other mobile or wireless communication units. Similarly, the term mobile telephone network refers to any kind of wireless communication system, both existing and prospective, and systems based on both local base stations and satellite communication.

## PATENT CLAIMS

1. A method for performing a payment transaction between a customer, a sales location and a payment operator, where the customer is equipped with a mobile communication unit, where the sales location is equipped with a payment terminal and where the payment operator is equipped with an operator system which is connected to a network which can communicate with the customer's mobile communication unit, which method comprises the following steps:

- a communication connection is established between the mobile communication unit and the payment terminal,

- the payment terminal transfers data comprising information concerning the transaction via the communication connection to the mobile communication unit,

characterized in that

- the mobile communication unit transfers data comprising information concerning the transaction via the network to the operator system. and

- the operator system registers data comprising information concerning the transaction for subsequent charging, invoicing or other settlement.

2. A method according to claim 1,

characterized in that it also comprises the following steps:

- the operator system transfers data comprising a confirmation that the said registration has been accomplished via the network to the mobile communication unit, whereupon the mobile communication unit may provide an indication that data comprising such a confirmation has been received, and

- the mobile communication unit transfers data comprising a confirmation that the said registration has been accomplished via the communication connection to the payment terminal, whereupon the payment terminal may provide an indication that data comprising such a confirmation has been received.

3. A method according to claims 1-2,

characterized in that the mobile communication unit is a mobile telephone, and that the network is a telecommunication network which includes a mobile telephone network.

4. A method according to claims 1-3, characterized in that the communication connection between the mobile communication unit and the payment terminal is established by an electrical connection through a communication port in the mobile communication unit.

5 5. A method according to claims 1-3, characterized in that the communication connection between the mobile communication unit and the payment terminal is established by an optical connection, preferably infrared transfer.

10 6. A method according to claims 1-5, characterized in that the data which are transferred via the communication connection from the payment terminal to the mobile communication unit, and the data which are transferred via the network from the mobile communication unit to the operator system comprise data identifying the sales location and data representing the amount which has to be paid.

15 7. A method according to claim 3, characterized in that the operator system also fetches information concerning the payment location by means of services in the mobile telephone network.

20 8. A method according to claim 6, characterized in that the data identifying the sales location are received in advance by the payment terminal. the data having been broadcast through a local radio broadcasting system at the sales location.

25 9. A system for performing a payment transaction between a customer, a sales location and a payment operator. comprising a mobile communication unit for the customer, a payment terminal for the sales location and an operator system connected to a network which can communicate with the mobile communication unit, characterized by  
- a communication connection between the mobile communication unit and the payment terminal, which comprises an electrical or optical  
30 communication port in the communication unit which is adapted to a corresponding communication port in the payment terminal.

10. A system according to claim 9,  
characterized in that the mobile communication unit is a mobile telephone,  
and that the network comprises a mobile telephone network.

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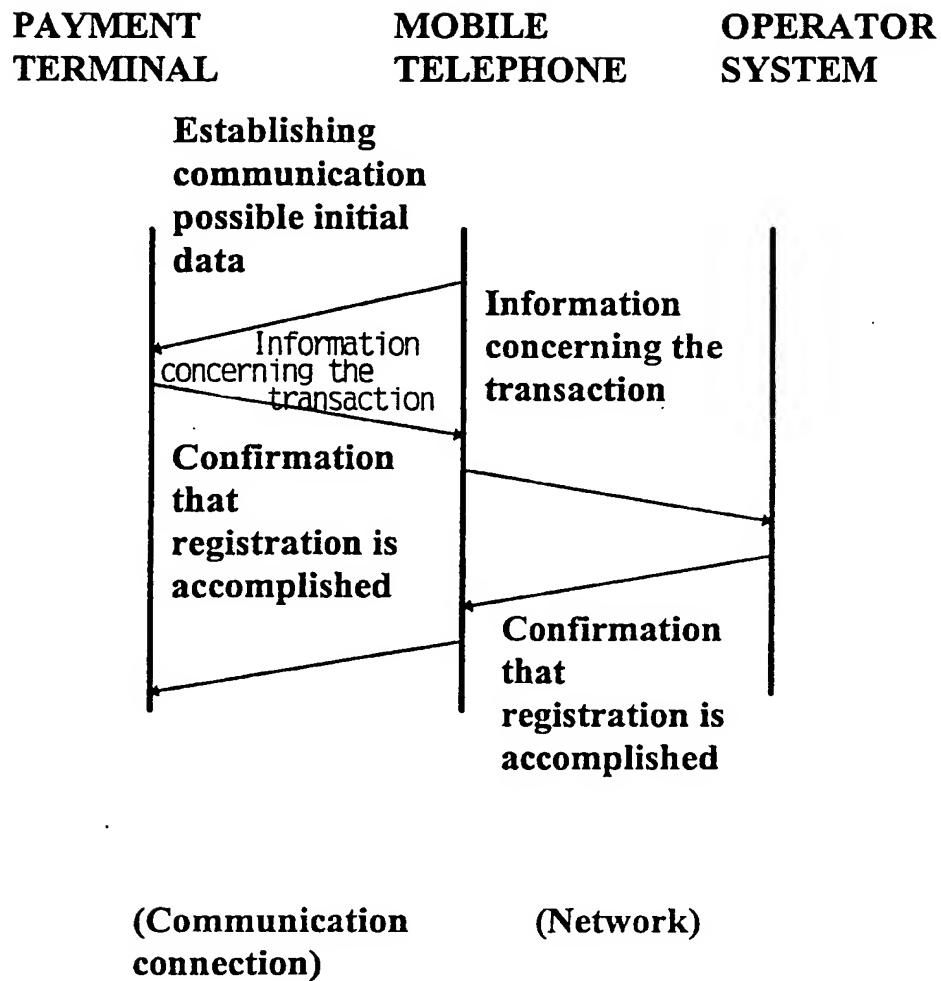


Fig. 1

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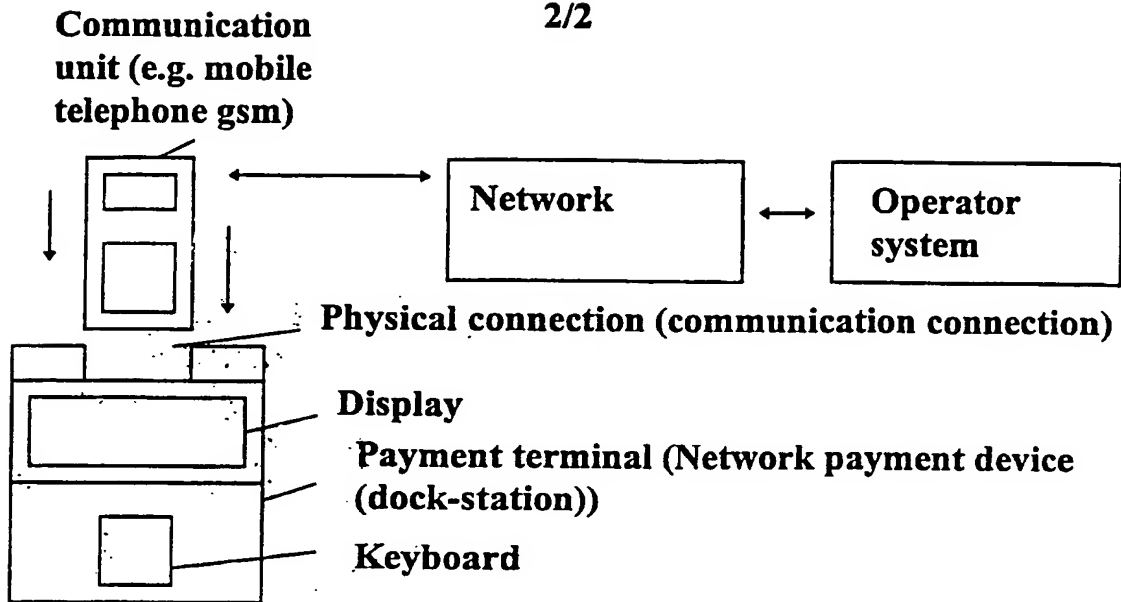


Fig. 2a

